SEX BIAS IN EXPERIMENTAL NORM FORMATION BY TRADITIONAL AND NON-TRADITIONAL WOMEN

By

LINDA ANNE HOLCOMB

Bachelor of Arts
Northeastern Oklahoma State University
Tahlequah, Oklahoma
1969

Master of Science
Oklahoma State University
Stillwater, Oklahoma
1974

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Thesis Approved:

Julia L. McHale

Thesis Adviser

Kenneth D. Sandoval

Mark Kumachiro

Nick Stinnett

A. N. Durham

Dean of the Graduate College

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Sex Roles and Compliance

The relationship between sex and compliant behavior has been a subject for extensive research. One of the most stable findings from past literature has been that females exhibit more compliance than males over a variety of experimental circumstances (Crutchfield, 1955; Asch, 1956; Beloff, 1958; Nakamura, 1958; Tuddenham, 1958, 1961; Tuddenham, MacBride, and Zahn, 1958; Janis and Field, 1959; Kanareff and Lonzetta, 1960; Patel and Gordon, 1960; Walker and Heyne, 1962; Allen and Crutchfield, 1963; Crowne and Liverant, 1963; Iscoe and Williams, 1963; Hollander, 1965; Hollander, Julian, and Haaland, 1965; Carrigan and Julian, 1966; Endler, 1966; Julian, Regula, and Hollander, 1968).

According to Goldberg (1975), for some time it has been supposed that sex differences in such socially influenced behavior as conformity, compliance, and persuasibility were conditioned consequences of the culturally prescribed roles for the male and female. Krech, Crutchfield and Ballachey (1962) suggest that the socialization of females emphasized dependence upon the group and submissiveness to the male, where as males in our culture are taught to be self-sufficient and independent in thought. Nord (1968), in an article on

persuasibility and social exchange theory, hypothesized that less confidence and a greater need for social approval might account for the findings of greater compliance among women. Tuddenham and MacBride (1959) found females were more apt to perceive "others" as being more well-informed and above average in intelligence than were men. Also, the authors reported females were less likely to use dissonance-reducing alternatives to compliance such as devaluation, underrecall, and rejection.

In the same vein, exploration of personality and motivational correlates of susceptibility to social influence have in most cases revealed differential responses to influence for males and females. Such correlations have usually been interpreted as evidence that cultural prescriptions for docility, plasticity, compliance, and submissiveness in the female role tend to obscure or override relationships between personality factors and compliance behavior in females (Janis and Field, 1959; McDavid and Sistrunk, 1964; Tuddenham, 1961).

In several more recent studies, these findings of gender differences in compliance have not always been supported (Allen and Levine, 1969; Constanzo and Shaw, 1966; Goldberg, 1970, 1974, 1975; Iscoe, Williams and Harvey, 1964; Sistrunk, 1969; Sistrunk and McDavid, 1971; Hoffman and Maier, 1966; Timaeus, 1968; Vaughn and White, 1966). Typically these results were explained as rare exceptions.

In two such investigations (McDavid and Sistrunk, 1964; Sistrunk and McDavid, 1965), group pressures were applied upon individual judgments in a highly abstract task that was relatively free of socially meaningful content. Sistrunk and McDavid (1971) found no significant differences between males and females in amount of compliance, and they

attributed the past findings of greater compliance on the part of females to the nature of the task. They argued that most investigations may have used experimental tasks tapping skills more often associated with male competence. In controlling the task variable Sistrunk and McDavid showed that females comply more than males only when the items are male-related.

Goldberg (1974) replicated Sistrunk and McDavid's findings and additionally provided support for the traditional view that sex roles are also a crucial variable in determining the degree to which females exhibit compliance behavior. It is interesting to note that as early as 1955, Crutchfield's studies of "conformity and character" indicated that compliance was related to the sex role of the subject. Generally Crutchfield's female subjects complied more to the planted majority than did his male subjects. But more specifically it was reported that those females who scored high on the Gough socialization scales also scored high on the compliance task and the reverse was also true, that the "non-conformist" tended to score lower on the Gough Scale. In the situations studied by Crutchfield it was either the female's acceptance or rejection of the culturally defined female sex role that determined to a large degree the type of behavior exhibited in the complying situation.

Goldberg (1975) extended the argument for multiple determinants of compliance by experimentally determining that the composition of the majority influencing agent (male, female or mixed), task gender, and the sex role of the subjects all figured in the degree of compliance. It is Goldberg's findings concerning the sex roles of females and the gender of the influencing agent which are of particular interest in the

present study.

Traditional females tended to comply most to an all-male majority when items were male-related. When the items were female-related they complied to the same extent to all three types of majority. Goldberg's explanation for these results was that traditional females have a general tendency to yield most to men, a tendency that becomes attenuated when the task is clearly female-related.

The pattern of compliance manifested by subjects who have presumably rejected the conventional sex roles was distinctly different from the one shown by more conventional subjects. That is, non-traditional subjects conformed to the same extent to the three types of majority, regardless of the nature of the item. Furthermore, non-traditional females although they conformed the most to an all-female majority on the female-related items, showed a conformity pattern different from that shown by the traditional females. Traditional females reacted the same way as the Masculine (traditional) males.

Traditional females complied the most to the all-male majority on both neutral and male-related items, and they showed a nonsignificant trend to do the same on the female-related items. Furthermore, anti-lib females complied the most to the all-male majority on the neutral and male-related items, and, in general, anti-lib subjects conformed more than pro-lib subjects.

Statement of Problem

These recent trends in research have established that many factors converge in determining the degree of compliance exhibited by women in various research paradigms. Most salient among those factors

studied have been sex roles of participants, nature of the experimental tasks, and the source (gender) of the influencing agent.

The purpose of the present study was to assess the effects of introduced sex bias (presented by experimenter suggestion) on the performance of traditional and non-traditional females on an unstructured judgmental task, the Hexagonal Horizontal-Vertical Judgment Situation (Hex). In Phase I, each subject was given thirty individual trials on the Hex to establish individual baselines. This set of trials was followed by a rest break during which time a set of arbitrary, fictitious norms on Hex performance was reported verbally to the subject by the experimenter. These norms were variously attributed to male students, female students, or college students in general with no reference to sex of students. In Phase II, subjects were taken back into the Hex lab and thirty more individual trials were given. The dependent variable was the degree of compliance to the arbitrary norms calculated as the mean of trials on Phase II minus the mean of trials on Phase I.

A post-experimental questionnaire was administered to each subject. Questions concerned the Ss remembered estimates of the average distance between the lights on Phase I and Phase II, and the average time between light pairs on both Phase I and Phase II. Finally, she made estimates of her confidence on both phases of the experiment.

Phase I and Phase II Hex scores, as well as Phase I and Phase II confidence scores, were subjected to split-plot factorial analyses of variance. Difference scores (Phase II minus Phase I) on the Hex and on confidence scores were analyzed by completely randomized factorial analyses of variance. Planned and post hoc comparisons were analyzed by Tukey's HSD Statistic (Kirk, 1968).

Hypotheses

In light of the previous discussion the following hypotheses were proposed concerning performance on the Hex.

1. Traditional females will comply more to arbitrary norms than non-traditional females.

2. Traditional females will comply more than non-traditional females on the male norm condition.

3. Traditional females will comply more than non-traditional females on the female norm condition.

4. Traditional and non-traditional females will comply to the same extent on the control norm condition.

5. Traditional and non-traditional females will show greater compliance to male than to female norms or control norms.

CHAPTER II

BACKGROUND OF STUDY

Background

The first portion of the literature review deals with the measurement of female role concepts within an historical perspective. The recently developed Attitudes toward Women Scale (Spence and Helmreich, 1972) and the Attitudes toward Women Scale-Short Form (Spence, Helmreich and Stapp, 1973) will then be discussed. The Attitudes toward Women Scale--Short Form was the instrument used to measure female role concepts in the present study.

In the second section of the literature review, the development of norm formation judgment situations and their use in the study of compliance will be covered. A discussion of the Hexagonal Horizontal-Vertical Judgment Situation (MacNeil and Gregory, 1969), which was used in the present study, will comprise the final portion of the literature review.

Female Role Concepts

Various devices and categorical schemes have been used to assess women's role concepts (Kirkpatrick, 1936; Komarovsky, 1946; Fand, 1955; Heilburn, 1963; French and Lesser, 1964; Kammeyer, 1964; Rossi, 1965; Vaught, 1965; Porter, 1967; Kalka, 1969; Tangri, 1969; Gump, 1972; Lipman-Blumen, 1972; Sistrunk, 1972; Spence and Helmreich, 1972, 1974;

Wrightsman, 1972; Goldberg, 1975; Jones, 1975). A significant number of feminine role studies have been conducted by first designating two polar types of roles. Some years ago in a discussion of contradictory sex roles Komarovsky (1946) labeled the two general sex roles available to the American college woman as "feminine" and "modern."

In investigating whether or not it is possible to measure the attitudes of college women toward the feminine role, Kammeyer (1964) referred to the two polar types as "traditional" and "modern" roles. His "traditional" role had the same substantive meaning as Komarovsky's "feminine" role. French and Lesser (1964) grouped the value orientations of their subjects by use of the Student Attitude Scale, and identified two groups of women as holding either "women's role" goals or "intellectual" goals.

Fand (1955), in order to explore concepts of the feminine roles held by college women, devised an instrument by means of which the degree of self- or other-orientation of each individual woman could be expressed in a scale that designated her position on a continuum. The extremes of the continuum were identified as indicating "traditional" and "liberal" concepts of the feminine role. In a study of behavioral compromise, Weiss (1961) selected college women because he thought them to be a population which is highly sensitized to role alternatives. He used the Terman-Miles Masculinity-Femininity Test as a measure of sex-role identification. Zisses (1961), in an exploration of career-marriage interest of university freshmen women, asked her subjects to differentiate themselves by self-rating along a continuum of career

and/or marriage groups.

More recently Steinmann and her associates (1964), using Fand's Inventory of Feminine Values, studied the nature of feminine beliefs. The thirty-four items on the inventory delineated the Fand Self-Other orientations and identified subjects as "passive" and "active" in their approach to the feminine role. Rossi's (1965) longitudinal study conducted from the spring of 1961 to summer of 1964 and based on a sample of college women graduates contained, as a part, a questionnaire concerning actual experiences and expectations of domestic and family roles. Using career goals as a basis, Rossi grouped her sample into three classifications: Homemakers . . . whose only career goal was "housewife;" Traditionals . . . women with long-range career goals in fields in which women predominate; and Pioneers . . . women whose long-range career goals were in predominantly masculine fields. In a discussion of the findings Rossi excluded the traditional women and made her comparisons between the pioneers and homemakers. She noted that on variables such as attitudes toward children, family ties and career plans, the traditionals fell between the homemakers and the pioneers, though closer in most cases to the homemakers. Kalka (1967) used the Fand Inventory of Feminine Values in a comparative study of feminine role concepts of a selected group of college women. Subjects in the study were identified as holding either self- or other-orientations toward the feminine role. Lipman-Blumen (1972), in a study of how ideology shapes womens' lives, grouped respondents into two polar categories which she labeled as "traditional" and "contemporary."

Basically the scales used by the various investigators distinguished between women with traditional attitudes and those with liberal attitudes, about female traits and behavior. In each of the researches mentioned, the measurements used tended toward a normal distribution. Some of the classifications of attitudes about female traits and behavior, when measured on a continuum, fell toward the extremes of each continuum, but the majority of the subjects could be places in close relation to the mid or zero point with the majority leaning toward the more traditional view. Almost all of the literature concerning feminine role is prefaced with the idea that attitudes toward women and conceptions of their role are undergoing revolutionary changes.

Research on women's roles according to Noble and David (1959), has been aimed generally at: (a) understanding the many possible interpersonal adjustments required of women, and (b) understanding some of the factors involved in different role conceptions. According to Spence and Helmreich (1972) "Our knowledge of these matters, however, is largely impressionistic . . . Empirical data about current attitudes, as opposed to speculative assumptions are scarce" (p. 2).

Early attempts to study women's concepts of the female role were made by Komarovsky (1953), Myrdal and Klein (1956). Present day investigators often correlate their studies with the opinions and research findings of the three women.

More recent studies have been made by Fand (1955), Weiss (1961), Slote (1962), Kammeyer (1964), Steinmann (1964), Kalka (1967), Lipman-Blumen (1972), Sistrunk (1972), Spence and Helmreich (1974), Goldberg (1975), Jones (1975). Fand (1955) asserts that "We do not have today a generally accepted concept of the feminine sex-role.

Contradictory dicta coexist side by side" (p. 7). The purpose of her study was to investigate the concept which college freshman women have of the feminine sex role and to gain some understanding of factors involved in the formulation of the concept. In order to explore this area, Fand devised an instrument by means of which the degree of Self- and Other-orientation of each individual woman could be expressed in a scale that designates her position on the continuum.

The rating inventory devised by Fand was later used by Steinmann (1958) in her study of the concept of the feminine role in the American family. The purpose of the Steinmann study was to determine whether or not there is a relationship among the concepts of the feminine role held by middle-class women attending a suburban college, and the feminine role concepts held by their mothers and fathers. The Steinmann study approached the problem of role concept in somewhat the same way as did Fand, but with certain modifications that provided some support to Fand's findings as well as extending her conclusions. Kalka (1967) also used the instrument devised by Fand in her comparative study of feminine role concepts of a selected group of college women. As a part of her study Kalka utilized the Fand Inventory to compare freshman and senior women in the college of Home Economics and Arts and Sciences. In the Lipman-Blumen (1972) study an index of female role ideology was developed to encompass two major dimensions of the adult female role: an internal dimension, based on issues of task-sharing between husband and wife, and an external dimension, related to patterns of appropriate female behavior outside the home. Responses to a six-item scale were summed to obtain a female-role-ideology score. Gump (1972) revised Fand's original inventory in her study of sex-role attitudes and

psychological well-being.

An interest in the question of what is "feminine" led Slote (1962) to study feminine character and patterns of interpersonal perception. The purpose of her study was to investigate the relationship between degree of psychological feminity and perceived similarity of the self to parents and to typical females and males of the culture. Slote states:

> According to role theory, people first learn and later adopt attitudes and behavior for role occupancy from models available to them. How one perceives the models and role affects his adequacy in fulfillment of the role. The correctness of one's role perceptions and one's functional adaptation to society, therefore, are clearly related (p. 12).

The Gough Femininity Scale is the instrument used by Slote. In Weiss's (1961) study of some aspects of femininity, thirty college females were initially examined with the Terman and Miles M-F Test. They were then sequentially introduced to two social situations, as part of an alleged study of the acquaintanceship process. The real purpose of the study was to observe and study female behavior as "compromise behavior." Each situation was a dyad in which one of the members was an experimental confederate; a male in the first and a female in the second.

Kammeyer (1964) investigated the possibility of measuring the attitudes of college women toward the feminine role. In the study concerned with feminine role behavior and female personality traits, he tested the hypothesis: "attitudes toward feminine role behavior and attitudes toward female personality traits are highly related." The primary task was to develop a set of statements or items about feminine role behavior which would meet the criteria of an attitude scale. Analysis of the data indicated that it is possible to construct

such a scale. The study was conducted with a random sample of 209 unmarried women on a state-college campus.

Sistrunk (1967) measured both male and female college students on the Guilford-Zimmerman masculinity scale. This study was designed to subject the Sistrunk-McDavid hypothesis to more strenuous test under more extreme circumstances. Comparisons were made of the conforming behavior, not just of males and females, but of highly masculine males and highly feminine females. Goldberg (1975) developed a Likert-type scale, Women's Liberation Scale to measure attitudes toward the women's movement. The short version of Gough's masculinity-femininity scale was also used in the study. Jones (1975) utilized the short form of the Attitudes toward Women Scale (Spence and Helmreich, and Stapp, 1973) in her study.

In most of the literature surveyed, the various authors have expressed the view that the question of feminine role is both a complex and ever changing one. Carlson (1972) devotes a large portion of one article to a discussion and critique of a bipolar construct (e.g., masculinity-femininity) in the social sciences. Cross-cultural comparisons such as that by Mead (1949) indicate that many of the roles typically considered specific to females or males in a particular society and time are actually reversed or greatly altered in other societies. Thus, it is important to guard against the ethnocentric tendency to label the roles adhered to and the behaviors displayed by large numbers of persons within a particular culture as "natural to the organism." As Cooley (1922) and Mead (1934) among others, have shown, the controlling features of the social-cultural environment are gradually internalized by the person in the form of habits, beliefs,

values, and other dispositions. Even in the absence of direct influence by others, therefore, conduct is directed by symbolic representations of the social world.

In considering female role concepts, another problem arises concerning the tendency of many respondents to answer direct questions concerning preferred roles in a way that the respondent perceives to be most socially desirable. In an attempt to develop unobtrusive instruments to measure attitudes toward female roles, Holcomb (1974) developed three disguised "crisis situations" questionnaires. These questionnaires and two direct instruments, a Likert-type instrument used in previous research and an open-ended questionnaire in which respondents were instructed to list statements answering the question: "Who am I?", were administered to three groups on the Oklahoma State University campus during the fall of 1972: two introductory sociology classes, one forestry class and members of a women's liberation group, Liberated Individuals for Equality (L.I.F.E.). In general, few significant correlations were found among any of the instruments. The only significant correlation found on the instruments was between the Likert and the self-report inventory. However, this correlation may not be constructed as indicating the validity of either instrument. What does seem indicated is a willingness of a vast majority of the subjects to state a preferred role concept on self-report type inventories. The degree to which such reported attitudes correlate with those displayed in more natural settings was beyond the scope of the research. According to Holcomb (1974), "Unobtrusive measures in natural setting might offer the most valid measure of female role concepts, it must be remembered that the stated preference is one

operational definition of the person's role concept" (p. 23). In considering the groups, there was a significant correlation between Likert and self-report inventory for all groups. Also, differences were noted among the groups on the self-report inventory and the Likert-type instrument. The implications of these findings are that the crisis situations did not in their present form discriminate attitudes toward female role concepts. Pace and MacNeil (unpublished) at Oklahoma State University, are in the process of standardizing an unobtrusive measurement device for assessing female role concepts; however, the standardized scale is not yet available.

Thus to this writer's knowledge no standardized, widely-used unobtrusive instruments are available to measure female role concepts. Of those direct instruments surveyed, the one chosen for the present study is the Attitudes toward Women Scale-Short Form (AWS-S) developed by Spence and Helreich and Stapp (1973). The AWS-S is an abbreviated form of the Attitudes toward Women Scale AWS (Spence and Helmreich, 1972).

The Attitudes toward Women Scale

The AWS is an objective instrument developed to measure attitudes toward the rights and roles of women in the contemporary American society. The AWS was chosen for a number of reasons. First an extensive review of the available instruments was conducted by the authors, eliminating many on statistical grounds (lack of adequate standardixation and unsound psychometric techniques) and the outdated nature of the quesitons. Beginning with the items from the Kirkpatrick Belief-Pattern Scale for Measuring Attitudes toward Feminism (Kirk-

(Kirkpatrick, 1936), Spence and Helmreich developed a new scale (AWS) to include such factors as the updated legal status of women. After several revisions the data were subjected to various statistical analyses, performed for each sex separately, which included factor analysis and item analysis. Extensive normative data were collected from a sample of university students and their parents. Both normative data and factor analytic structure of the scale are described in detail by Spence and Helmreich (1972).

Thus the AWS is salient to the contemporary situation, psychometrically sound, and was standardized on an extensive sample of recent college students. Since its development the AWS has been used in at least one study (Jones, 1975). Separate machine scorable answer sheets are available to expedite the scoring process.

The AWS is in its final form consists of 55 items, each presented as a declarative statement for which there are four response alternatives: Agree Strongly, Agree Mildly, Disagree Mildly, and Disagree Strongly. Each item is scored on a scale from 1 to 3, with zero reflecting the most traditional conservative attitude and three representing the most liberal, pro-feminist attitude. A score is obtained by summing the values for the individual items, the range of possible scores going from 0 to 165 (Scale in Appendix A). Itmes were placed in six relatively independent categories. When overlap appeared the item was placed in only the one category judged most appropriate by the authors.

> These categories and the number of items in each are as follows: I. Vocational, Educational and Intellectual Roles (N = 17); II. Freedom and Independence (N = 4); III. Dating, Courtship, and Etiquette (N = 7); IV.

Drinking, Swearing, and Dirty Jokes (N = 17); (Spence and Helmreich, 1972, p. 6).

For normative data the AWS was administered to 420 men and 529 women in several classes in introductory psychology at the University of Texas at Austin in the fall of 1971, and to 293 men and 239 women in several classes during the spring of 1972. Selected statistics from the two samples of men and of women, and from the two samples combined, were run. As stated by Spence and Helmreich (1972): "Inspection of these data indicates that the distributions for the two semesters are similar, particularly for the women. The stability of the distributions thus suggests, indirectly, that a reliable phenomenon is being tapped (p. 6)." It was noted that the distributions were somewhat positively skewed toward the liberal end of the scale. In general men tended to respond in a more traditional manner than women. When items were compared by t tests, significant differences ($p < .05$) between uniformly more feminist in their stated attitudes.

Spence and Helmreich (1972) hypothesized that these departures from the traditional roles might be more marked among the generally younger students than among older groups; therefore, a sample of the students parents were also administered the AWS with the advantage of having relatively constant demographic characteristics. Of the student group, 478 volunteered the names of their fathers, their mother, or both. Forms were sent to the 452 mothers and 420 fathers who were then residing in the United States. Usuable data were obtained from 64.6% of those who received the AWS. As reported by Spence and Helmreich (1972):

> In these data, several facts are apparent. Whether one compares the total samples of parents and students or

> the subsamples of parents and their same-sexed children, the scores of the older group tend to be lower, i.e., more conservative, than those of the students. (In each case, the t comparing the means had p .05). In both generations, the mean score for the women was higher (more liberal) than that for men but the difference between the sexes was more marked in the student groups. In generational terms, the daughters were more markedly liberal, in comparison to their mothers, than were the sons in comparison to their fathers (p. 10).

Both student and parent were subjected to image analysis (Gutman, 1953) to determine the factor structure of the instrument. Image analysis was utilized to eliminate the variation unique to individual items.

The Attitudes toward Women Scale (Short Form)

A short form of the AWS, consisting of 25 items, was developed to replace the full 55-item scale when testing time was a problem and/or a numerical score for each respondent was sought rather than information about the distribution of responses to the individual items. Items were selected on the basis of item analyses done on samples of 241 female and 286 male college students (Spence and Helmreich, 1972). The scores on the short form can range from zero to 75. Normative data for the 241 females resulted in $\overline{X}$ = 50.26 and S = 11.68 and for the 286 male students, $\overline{X}$ = 44.80 and S = 12.07. Correlations between the subjects' score on the short form and the full scale were .97 for both male and female students. Since time was an important factor in the experiment, and the individual's score rather than distribution information of the AWS was employed.

The AWS went through several validation procedures before arriving at the final form. Statistical analyses, including factor analyses and item analyses, led to some items being dropped, others rewritten, and

the introduction of additional items to the scale. Analyses were run for each sex separately and by groups determined by an individual's total score on the scale. All items failing to discriminate among the subgroups, or that were redundant, were omitted with the most statistically satisfactory items retained. A few items which were judged "psychologically interesting," but did not meet the later criterion, were retained.

Norm Formation

The study of compliance cannot be studied apart from its referent, i.e., norms. Compliance, as differentiated from conformity, does not indicate that norms formed in a particular situation would persist either in subsequent alone conditions or under conditions of contradictory social pressure. Compliance in the present study indicates a temporary shift from the norms formed in alone conditions to those arbitrary norms presented as the experimental manipulation. Conformity could only be established if Ss were retested, and the norms they formed persisted in these subsequent alone conditions or under conditions of further social pressure. For a more detailed differentation between compliance and conformity refer to Pollis and Montgomery (1966).

Results of Sherif's 1935 classical experimental study of social norms using autokinetic movement judgments indicate that when an individual is confronted with a stimulus situation which is unstructured (i.e., ambiguous), he established a norm consisting of a range of judgments (a scale) and a point within that range peculiar to the individual (Sherif, 1935). This definition takes into account such salient factors as individual differences and varying circumstances by designating

ranges of positive and negative behaviors, not absolutes. Thus, a norm is a scale or standard which delineates acceptable and non-acceptable behavior in relation to a specific set of stimuli (Pollis and Polis, 1969; Sherif and Sherif, 1969; Pace, 1972).

In addition, the normative scales may vary in different degrees from the ranges and norms developed by other individuals, revealing consistent individual differences. As stated by Sherif and Sherif (1969) ". . . the tendency toward stability is rooted in basic psychological processes and is not a unique outcome of social interaction" (p. 206).

Norm Formation and Scaling

This now well-known experiment of Sherif's initiated the study of norm formation within the controlled setting of the laboratory utilizing ambiguous psychophysical to psychosocial. Along this continuum the factors change and increase in complexity and dimensions (p. 1)." Since life is a constant process of perceiving, one might view this process in relation to the physical properties of the things we see (stimuli). According to Manning and Rosenstock (1968) psychophysics tries to find the relationship between the physical characteristics of the stimulus and the psychological characteristics, or the way we perceive the stimulus. When these stimuli possess quantifiable properties, the resulting (numerical) scale is a psychophysical scale. As stated by Sherif and Sherif (1969) "Categories of behavior corresponding closely to salient stimulus properties and their gradations are called psychophysical scales" (p. 201).

According to Manning and Rosenstock (1968) Ernst Weber (1975-1878) was the first psychologist to record and give systematic study to the idea that the physical and psychological worlds are not identical, that the psychophysical scale for judgment does not correspond precisely to the physical scale. He believed, however, that a ratio between the actual value of the physical stimulus (which could be measured by standard physical scales) and the change in the value of the stimulus which was just noticeable was a constant fraction. Fechner later delved into the problem of psychophysical scaling and expanded Weber'slaw and formulated his own physical function which is called Fechner's law.

The study of psychophysics is not simply of historical interest. A large number of more recent texts are devoted, at least in part, to the modern developments in scaling and psychophysics (Stevens, 1951, 1957, 1962; Guildford, 1954; Edwards, 1957; Torgerson, 1958; Brown, Galanter, Hess and Mandler, 1962; Helson, 1964; and MacNeil and Pace, 1973). The importance of psychophysical scaling methodology is described in Manning and Rosenstock (1968):

> 'Classic' psychophysics does, indeed, seem dull to us today--a student can only measure so many weights, lights, or tones before wondering what all this has to do with the study of behavior. He can perform the classic routine experiments on psychophysical methodology for only so long before he wonders if psychology has not lost its mind. But these reactions, normal as they may be, miss the point of psychophysics and scaling; their importance lies not so much in the data which they produce, particularly in the usual laboratory experiment, but in the fact that in one way or another every experiment--whether it be on social attitudes, learning in the monkey, or slot-machine playing among adults--has recourse to the <u>principles</u> of psychophysics (p. xi).

In social life, people encounter stimuli for which no physical measures are feasible. For example, what constitutes appropriate behavior in pre-marital dating? Or, is Bill twice as handsome as John? In both these situations, dealing with social objects, the objective stimulus factors do not dictate a particular choice of evaluative behavior. As long as individuals and groups of people adhere to different (and measurable) positions on these and other issues in human relations, it is appropriate to speak of "scales" in such matters. In such cases it is not a physical or psychophysical scale; rather, it is a psychosocial scale (Sherif and Sherif, 1969).

> A psychosocial scale is based upon consensus or agreement about the positions it includes at a given time and in a given setting. Some psychophysical scales have been based on consensus, too. At some point, however, they can be checked against physical events . . . psychosocial scales refer to social facts and to schemes of categorization based on them through consensus. Their referents are the regularities in social life: groups that uphold different stands, values, or norms with their patterns of acceptability and rejection; status and role relations, social institutions, ideologies, technology and its products. (Sherif and Sherif, 1969, pp. 337-338).

When ambiguous stimulus situation psychophysical situation with measurable dimensions is used by a researcher, and social factors are purposefully and often differentially introduced to assess their influence, (e.g. interaction of individuals or experimenter suggestion), the resulting scales are termed psychophysical-social. This latter category is the appropriate classification for the stimulus situation as it will be presented in the present study utilizing the Hex apparatus. Social variables will be introduced by experimenter suggestion. Before this aspect of the experimental design can be elaborated, it is

first advisable to discuss the question of degree of ambituity of the stimulus situation.

Norm Formation and Ambituity

As related in Sherif and Sherif (1969), Durkheim the sociologist observed that norms emerge in the out-of-the-ordinary (i.e., unstructured or fluid) situations, when the usual routines and rules of daily living are not appropriate. Sherif and Sherif (1969), in addressing themselves to the issue of social movements and social change, speak of the temporary state of "normlessness" engendered when people are attempting to "shed" old norms associated with their dissatisfaction. Though the example of social movements highlights the tendency toward psychological patterning to an accentuated degree, the principle still remains true when the motivational basis is less pressing.

> Instigated by the motivational base, alienated from the prevailing state of things and normative anchorages, torn between dysfunctional norms and aspiration for a better life, individuals are thrown into a state of restlessness and personal crisis. They are left with the tensions of their misery, deprivation, or frustration without firm moorings or anchorages. Their whole sense of the stability of the self-image is disturbed or shattered, along with certainty and structure of the social world in which they live. The state of normlessness, the state of being torn by value or norm conflict is painful and not to be endured for long.
>
> The psychological state thus engendered sets individual in motion to search for ways to reestablish a social world for themselves that is stable, predictable, less prone to traumatic and unexpected turmoils than the world of crisis they are in (p. 558).

When the field of impinging stimuli is fluid or does not provide clear-cut categories, the individual provides them, either forming new categories, or, more often, using categories he has already formed (Sherif and Sherif, 1969). The authors go on to state:

8. In Unstructured Stimulus Situations, Alternatives in Psychological Patterning are Increased (p. 30).

9. The More Unstructured the External Stimulus Situation, the Greater the Contribution of Internal Factors--Including Internalized Social Values and Standards (p. 31).

10. The More Unstructured the Stimulus Situation, the Greater the Effectiveness of (External) Social Influences (Solutions, Communications, Suggestions) that Offer an Alternative for Psychological Patterning (p. 32).

These principles imply that the objective structure of the stimulus situation can be ordered in gradations from highly structured to less and less structured. When there is little variation among individuals in the way a particular stimulus situation is experienced and responded to, the stimulus situation is considered highly structured. When the reverse is true, when there is greater variation among individuals, then the stimulus situation is considered highly unstructured or ambiguous. Another operational measure of degree of ambiguity, which has been used extensively in the study of norm formation, persistence and change, is the degree of persistence of norms formed in laboratory judgment situations when the naive subjects are faced with social pressures by a planted majority giving different, contingent norms (Pollis and Montgomery, 1966) or by experimenter confederates posing as subjects and giving norm judgments which are arbitrary, i.e., statistically different from those which would form without experimenter manipulation (Kelman, 1950; Linton, 1954; MacNeil, 1964, 1967; Vidulich and Kaiman, 1965; Pace, 1972; Whittaker, 1958). The degree to which naive subjects comply appears to be partially a function of the ambiguity of the total stimulus situation as well as the particular type of social pressure imposed. Under conditions lacking objective structure, the individual becomes

increasingly uncertain and suggestibility is increased (Sherif and Sherif, 1969).

Sherif and Sherif (1969) suggest several stimulus properties (e.g., similarity, proximity, good continuity) as combining to produce either a compelling pattern in the stimulus field or, in the other extreme, a situation in which such factors conflict or are absent. A number of other different measures of stimulus structure have been offered. For example, Wiener (1958) defined ambiguity as "the relative probability value of each interpretation in a two-choice situation (p. 257)." Flament (1959) broadened this definition by recognizing a full range of stimulus structure from no ambiguity (all responses to the stimulus being identical) to complete ambiguity (all responses to the stimulus being equally probable). An index of structure not limited to two-choice situations was thus proposed by Flament.

According to Graham (1962), in Sherif's 1935 study the stimulus was highly ambiguous with respect to the judgment of distance the point of light seemed to move in the absence of physical cues to distance. A high degree of ambiguity in the typical Autokinetic (AK) situation may be inferred from the great degree of variability from individual to individual on any of the measurable (e.g. distance, direction, and duration) dimension- utilized in the AK situation (Luchins and Luchins, 1969). Also substantiating the supposition of a high degree of ambiguity in the AK situation is the relatively low degree of persistance of norms formed by individuals in the face of later moderate social pressure (Pace, 1972).

Luchins and Luchins (1945, 1950) used ambiguous picture material, in which the degree of ambiguity can be varied more systematically, and

found that with misleading suggestions conformity was greatest for the most ambiguous picture. In this study degree of ambiguity was established prior to the presentation of the stimulus material. The measure of degree of compliance to suggestion was used to define the degree of ambiguity as was persistence of response. Another study (1950) used designs of varying ambiguity (empirically determined) and required the subjects to say which of two alternative names best fitted each design.

Thrasher's (1954) study dealt with judgments concerning the location of lights in three gradations of stimulus structure and used as his indices the error in the direction of a friend's judgment or a stranger's judgment as the measure of varying social influence in the three situations. Thrasher demonstrated the degree of structure in these situations by finding that variations in judgments by different individuals decreased and correspondence with the objective structure increased from the least to the most structured situation.

Asch's (1956) research situations differ from other ambiguous stimulus studies in the sense that the stimuli used were almost completely unambiguous with respect to the task. Ambiguity was in effect created by disparity between the cues provided by the physical stimulus and those provided by the experimenter's confederates who constituted other "judges." The situation is a highly artificial one, since normally people are not found to differ in their responses where the stimulus is unambiguous. Luchins using a situation similar to that of Asch, but simply requiring the subjects to say which was the shorter of two lines differing by 1/16" to 1/2", reported, generally, though not always, the influence of his confederates as shown in distortions of judgment, was greatest when the difference between the two lights was least, or when

the stimulus was most ambiguous.

Coffin (1941) designed as experiment to assess the relationship of suggestibility to degree of ambiguity of different stimulus situations. He used three tonal attributes: pitch, volume, and a fictitious attribute labeled "orthosonority," the latter property representing the greatest degree of ambiguity. Coffin found that pitch, the least ambiguous tonal attribute, was the least amenable to experimenter suggestion. Volume, intermediate in degree of ambiguity, could be reversed with some subjects, while "orthosonority" invariably increased with ambiguity.

The studies mentioned, though certainly not exhaustive, do represent the importance of the question of ambiguity of the stimulus situation in research related to norm formation, persistence and change.

The number of ambiguous stimuli applicable to the field of inquiry is limited only by the researcher's imagination. A few such creative innovations, cited by Gregory (1972), are as follows: Asch's (1951) comparison of line lengths (unquantified); Moede's loudness of ball bounce as reported by Murphy and Murphy (1931); Munsterberg's numerosity estimations; MacNeil's (1967) shotgun shot patterns; Pollis' (1967) tone estimates; Harvey and Consalvi's (1960) estimates of distance between lights; and Schonbar's (1945) estimations of actual movement of light.

Research in this field has led to certain general principles. First, ambiguity over a period of time is an uncomfortable situation for most persons, and that individuals caught in such a position seek actively to establish structure or stability. According to Sherif and

Sherif (1969) some authors have referred to the phenomenon of discomfort in unstructured situations as "intolerance for ambiguity" (Frenkel-Brunswik, 1949). Also, as external structure decreases the greater the contribution of internal factors and the greater the effects of external social factors that offer alternatives for psychological patterning (Sherif and Sherif, 1969). A more specific discussion of social factors in norm formation will be presented in the next section. Before proceeding it is important to note that few studies have been conducted for purposes of comparing the relative degree of structure of different stimulus situations. Tajfel (1969) has noted that what is needed is intensified study of gradations of stimulus structure in relation to gradations in the stability of internal factors. Graham (1962) also points to the paucity of research concerned with determining the different degrees of stimulus structure of various research situations. Although it is not the specific purpose of this study to be concerned with different degrees of stimulus structure, knowledge in this area would facilitate placing the one situation used in this study in its appropriate context. Since it is obvious from the preceding review of the literature that degree of structure effects the degree of compliance to social pressure, prior knowledge of degree of structure is an important concern in the design of a particular study.

One study has undertaken such a task and is particularly relevant to the present study. Pace (1972) compared four stimulus situations, the AK, shotgun short pattern, the pinball, and the hexagonal horizontal vertical judgment situation (Hex), the last to be used in this study. Using a constant and low order of social pressure across the four situations, Pace found that three of the situations were equivalent while the

norms formed on the Hex were not equivalent to those which emerged in the other three situations. Thus it was concluded by Pace that the lack of comparability was associated with the relatively greater structure of the Hex, resulting from a greater degree of psychophysical and cultural anchorages.

Norm Formation and Social Factors

According to Gregory (1972) the study of social factors in norm formation utilizing simple, ambiguous judgment situations was preceded historically by a number of classroom demonstrations and experiments beginning around the turn of the century. Gregory cites Burnham, 1905; Mayer, 1903; Neumann, 1904; Schmist, 1904; and Triplett, 1908. These studies focused on the effects of working alone and in the presence of others on the quantity and quality of work produced in activities requiring motor output, association, attention, and imagination.

The early part of the twentieth century brought a proliferation of similar studies assessing the effects of "others" upon performance. In 1925, Travis studied simple motor responses on a pursuit-rotor task. He found clear improvement in performance when subjects were confronted with an audience. Dashiell (1930) found considerable improvement in performance due to audience effect on such tasks as simple multiplication or work association. But, as in many other areas, negative effects were also found. Pessin (1933) asked college students to learn lists of nonsense syllables under two conditions, alone and in the presence of others, and found that the presence of others interferred with the learning process. Husband (1931) found that the presence of others interferes with learning a finger maze. Husband and Pessin (1933)

confirmed these results.

These early studies of the effects of others (a social factor) upon performance bore refinement in later studies. A number of these early studies indicated that the mere presence of others was not the only salient factor in regard to performance, that the composition of the persons present also influenced the outcome. For example, were these others peers or informational leaders? More emphasis was then given to the characteristics of the individuals present and their relationship. Exemplifying such studies, where the characteristics of the interacting individuals were involved, are a series of experiments attempting to assess variables related to communication characteristics and persuasibility. Hovland, Janis, and Kelley (1953) have discussed in a systematic fashion the role of the communicator in the process of persuasion. According to Secord and Backman (1964), salient social factors were studies such as status of the communicator, perceived expertise, and a host of variables, e.g. physical characteristics related to perceived trustworthiness. Secord and Backman also discuss how group affiliations can alter the effectiveness of communications by affecting the amount of exposure group members have to communication, by influencing members concerning the perceived credibility of the source, and by giving support for either acceptance or rejection of the message.

The importance of group affiliation has long been recognized, and psychologists, anthropologists, and sociologists have extensively documented interpersonal behaviors and diversities linked with different group affiliation (Kluckhohn, 1954). What a person is and does can be

seen as proceeding, very largely, from the features of the group, real or imagined, to which he belongs, refers himself, or aspires (Sherif and Sherif, 1969). Whatever may be its specific attributes, the reference group is a primary source of a person's premise for action, including the development of normative values and behaviors.

Pollis and Montgomery (1966), utilizing the AK situation, showed that norms formed among interacting individuals with previous social ties (group members) were more persistent than norms developed in alone conditions and togetherness situations (no previous social relationships), when these individuals were later exposed to social pressure by a planted majority giving a different, contingent norm. MacNeil (1967) also used an indoctrinated norm given by a plant to assess the effect of group stability and status upon the formation and persistence of norms formed on the AK and an ambiguous situation requiring an estimation of the number of holes in a target made by a shotgun blast. According to Pace (1972) both Jacobs and Campbell (1961) and MacNiel (1964) studied the transmission of AK and similar judgment situation norms over subject "generation" by establishing initial arbitrary norms by confederates.

Experimenter suggestion has also been used to introduce social factors into experimental situations. The differential effect on behavior produced by experimenter instructions was most dramatically demonstrated in a series of studies concerning obedience to authority conducted by Milgram (1963, 1965). Milgram studied varying social factors, such as proximity, location, task, and social support, and their effects upon subjects' willingness to comply to experimenter instructions contrary to usual human values. Milgram found that his

predictions, as well as those of a group of psychiatrists, greatly underestimated the amount of electrical shock many subjects were willing to inflict upon others at the experimenter's suggestions. According to Sherif and Sherif (1969) "The differential effects on behavior produced by a researcher's instructions and requests are examples of response to authority perceived as legitimate" (p. 116). Concerning experimental conditions Pace (1972) says ". . . social factors such as experimenter suggestion and instruction, can result in differential effects upon performance" (p. 2).

The Hexagonal Horizontal-Vertical Situation

According to Gregory (1972) new judgment situations are needed which meet the following criteria:

> . . . the degree of ambiguity is such that a physically identical stimulus may be perceived, and judged, as different by the same subject on repeated presentations. The judgment situation has to provide a range of quantitative judgments of determinable limits and central tendency. The judgment situation also has to allow some divergence in individual judgments among a number of subjects judging the same stimulus presentation as a plausible outcome. The ambiguity in the situation cannot be so great, however, as to cause the subjects to feel that the task is so difficult that they cannot give a reasonably accurate judgment of the stimulus (p. 2).

A judgment situation developed by MacNeil, the hexagonal horizontal-vertical situation (Hex) appears to fit these requirements. The Hex is a norm formation stituation recently developed at the Oklahoma State University Center for Social Psychological Studies in which the task is to judge the distance between two points of light in an otherwise dark room (Gregory, 1972; MacNeil and Gregory, 1969; Pace, 1972). The Hex (Figure 1) utilizes, in part, the horizontal-vertical illusion

to create perceptual differences in the apparent distance between the points of light. The Hex consists of 13 lights positioned on a board in two overlapping hexagonal patterns around a center light. The stimulus apparatus is designed to present randomized sequence-of-presentation programs, each made up of 15 stimulus light pairs. Two points of light, i.e., a stimulus pair, are set to appear simultaneously for approximately 0.5 seconds duration. The subject's task is to judge the distance between the points of light. The actual physical distance between any two points of light remains constant, i.e., 15 inches, but appears to be variable in length according to the axis angle of a particular set of lights

Among other possible judgment situations, the choice of the Hex was dictated to some degree by the practical consideration of its availability. Also, because of its relatively recent development, there is less chance that potential subjects will already be familiar with it. Pace (1972) indicates that it is moderately unstructured and amenable to social influence. It appears to differ from some similar judgments tasks, such as the shotgun and pinball, in that it would probably not be identified per se as tapping skills specific to either sex or to a given sex role.

The Hex has been used to replicate Sherif's 1935 study of social norm formation with the AK, and has also been used in studies of social factors in natural group norm formation (Gregory, 1972; MacNeil and Gregory, 1969). The Hex has been systematically compared with other judgment situations with regard to degree of ambiguity (Pace, 1972).

CHAPTER III

METHODS

Subjects

The subjects for the study were 60 women students enrolled in introductory psychology courses at Oklahoma State University during the fall semester of 1975. The Attitudes toward Women Scale (AWS) was administered to both male and female student volunteers (N = 520) in group sessions approximately two weeks prior to the laboratory phase of the experiment. See Appendix A for the AWS. Extra credit, equalling approximately five percentage points on one of four class examinations was given to the students by their instructors for completion of the questionnarie. Students were also asked to supply certain demographic material and to indicate if they would be willing to participate further in the research project (Appendix A). Subjects were read the following instructions which appear in part of the face-sheet of the questionnaire:

> I would like to have some selected students serve further in this research project. If you wish to volunteer, you instructor will give you extra credit for your participation and at the end of the study you will receive a summary of the results as well as an individual session with the researcher upon request.
>
> Please indicate by placing an "X" in the appropriate blank on your face-sheer whether or not you would be willing to participate. Students not wishing to participate are asked only to fill out the questionnaire and supply the demographic information appearing above the dotted line.

> Those wishing to participate are asked to supply name, address, and phone number so that we may contact you if you are chosen. No individual names will appear in the results of this study, and your results will be held in the strictest confidence. Your continuance in the study will require attendance at the psychological laboratories on campus for a session of about 40 minutes. Do you have any questions?

The questionnaires of female students (N = 281) were scored and 30 Ss were chosen whose scores warranted their categorization as traditionals (lower 20% according to female norms established by Spence and Helmreich, 1973). Another 30 Ss were chosen whose scores warranted their categorization as non-traditionals (upper 20%--Spence, Helmreich and Stapp, 1973). A pool of 10 extra Ss in each categorization were chosen in case of scheduling difficulties. Only Ss 25 years old or younger (mean age = 18.2) were utilized in the final sample. The range, mean, and median of AWS socres for each categorization (traditional/non-traditional) in the final sample are contained in Appendix B. Norms established by Spence and Helmreich (1972) are found in Appendix C.

Procedures

The selected Ss were contacted and individual appointments were made. Appointment reminders, containing a map and day, date and time of appointment, were delivered to Ss the day prior to their scheduling. Subjects within the traditional classification were randomly assigned to three compliance conditions, i.e. male compliance, female compliance and/or control. The control group was defined as a group receiving arbitrary norms alone with no attendant stress on sex of norm population. Each compliance group consisted of 10 subjects. Subjects within the non-traditional classification were randomly assigned to three

compliance groups in a similar manner making a total of six groups (see Table I). All subjects were assigned by an experimenter assistant. E received only the name of the S and condition (male, female, or control norms) under which the S was to be run.

Phase I

Upon their arrival at the psychological lab, Ss were escorted by E into the darkened, light sealed room adjacent to the Hex lab. Descriptions of the Hex apparatus and dimensions and specifications of the dark-adaptation room and the Hex lab are shown in Figures 1 and 2. The following set of instructions was given to each S initially:

> Please be seated (Ss escorted to a seat). The initial phase of this experiment is what is called a period of dark adaptation, lasting approximately five minutes. This allows time for your eyes to adjust to the darkness of the lab. After dark adaptation I will lead you into the further darkened lab through this door (point with flashlight to door). At this point I will leave you for a moment to close the door. Then I will lead you to a table where you are to be seated. It that part clear to you? OK.
>
> After you are seated at the table in the lab, I will leave you so that I might work the apparatus. When I arrive I will ask you if you are ready. If you are please answer "ready." We will then begin the experiment.
>
> A few seconds after you have indicated your readiness you will see two points of light for a very brief time, approximately half a second. Your task is to judge as best you can the distance between these two lights. Immediately after the light disappears please give me your judgment in inches in a loud voice so that I may record your answers. Thirty such trials, or pairs of lights will be given at thirty second intervals. A short rest period will be followed by another 30 trials. Remember, immediately after each light pair disappears give your answer aloud in inches. Do you understand what you are to do?

After the first 30 trials on the Hex, Ss were escorted back to a chair in the dark-adaptation room.

TABLE I

MEAN HEX JUDGMENTS FOR EACH S BY CLASSIFICATION AND CONDITION*

Male Norms		Female Norms		Control Norms	
Phase I	Phase II	Phase I	Phase II	Phase I	Phase II
Traditional					
13.93	17.20	10.13	18.87	15.33	15.27
14.33	13.73	5.13	7.33	29.20	28.67
10.13	12.07	4.60	5.33	12.27	13.87
5.40	7.60	8.20	15.07	8.73	12.93
7.93	11.67	10.13	16.67	7.20	7.87
4.53	10.20	15.13	17.40	9.73	22.67
13.80	23.33	35.20	34.53	11.87	24.80
12.00	28.33	10.87	28.80	16.00	16.80
13.87	18.47	8.60	16.67	7.67	12.73
26.13	30.40	12.93	19.47	35.47	42.00
Nontraditional					
14.00	14.40	18.40	19.40	15.73	16.26
14.93	16.80	12.80	16.13	17.60	24.80
2.93	3.40	14.93	16.80	5.67	6.45
7.20	10.33	3.33	2.43	13.20	19.33
18.20	19.20	7.40	8.33	4.73	6.13
10.13	18.80	2.13	5.00	6.60	8.60
7.67	10.73	13.40	14.06	18.07	21.00
24.20	31.40	8.53	14.67	9.73	13.47
19.13	28.00	9.07	10.47	5.60	7.20
13.47	18.33	15.60	16.00	4.47	5.07

*Means in inches of 30 Phase I judgments on the Hex and means of 30 Phase II judgments on the Hex for each S according to classification (traditional or nontraditional) and condition (male norms, female norms, or control norms) $N_T = 60_{Ss}$.

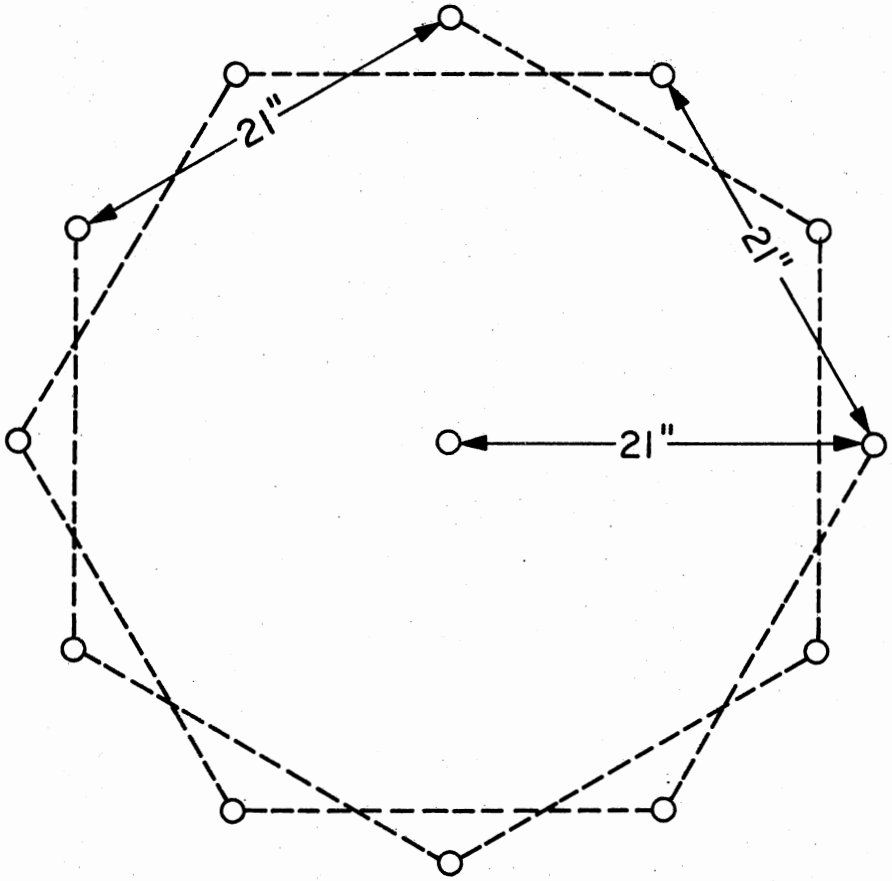

Figure 1. Position of Lights on Hex

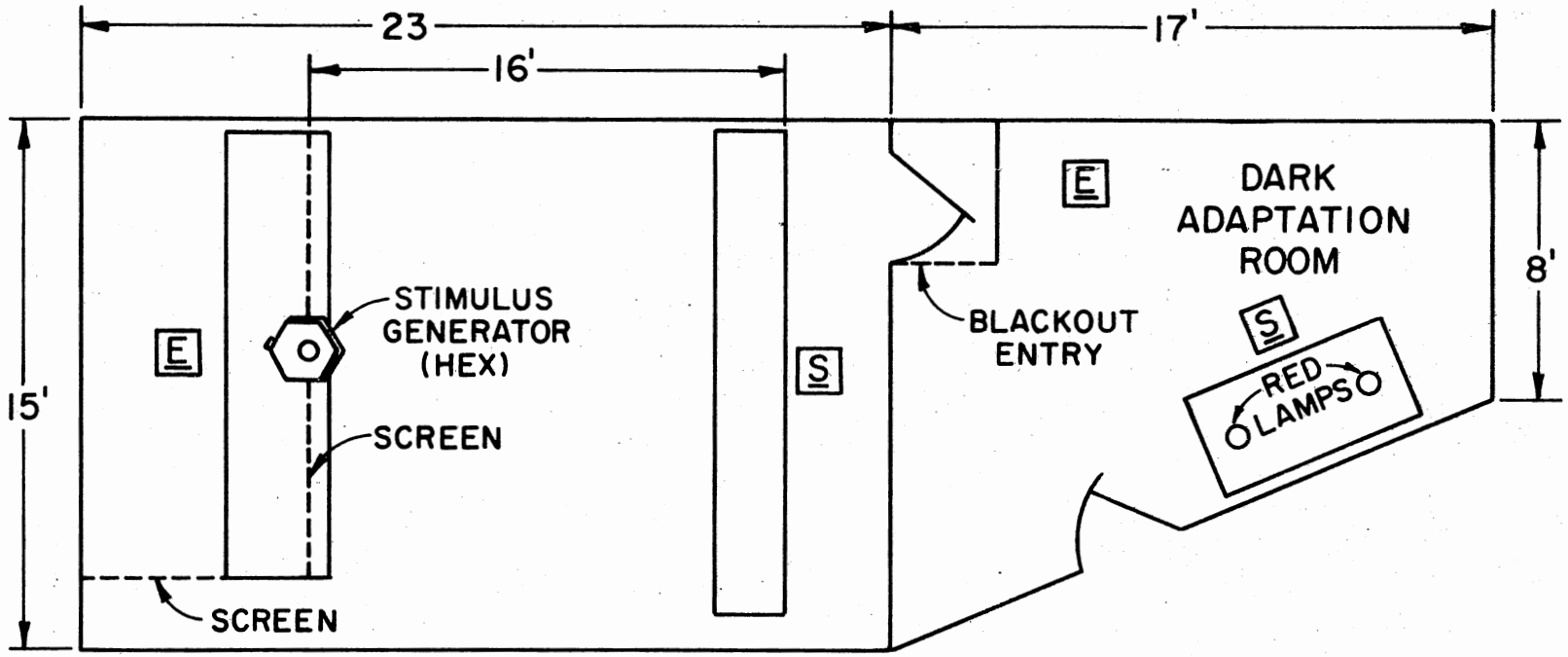

Figure 2. Dimensions of Hex Lab and Dark Adaptation Room

Phase II

During this "rest break", lasting approximately five minutes, Ss received verbal information from the E, ostensibly to acquaint the S with the nature of the Hex apparatus.

Each of the six experimental groups was given selected information. Traditionals received arbitrary norms alone (T_A; N = 10); non-traditionals received arbitrary norms alone (NT_A; N = 10); traditionals received arbitrary norms with information that those norms were formed by females (T_{FA}; N = 10); non-traditionals received same arbitrary norms and told they were formed by females (NT_{FA}; N = 10); traditionals received same arbitrary norms with information that these norms were formed by males (T_{MA}; N = 10); and non-traditionals received same arbitrary norms were told they were formed by males (NT_{MA}; N = 10). The range of arbitrary norms was established through pre-testing (Shaffer, 1974).

T_A and NT_A subjects received the following memorized instructions in a conversational voice:

> Are you experiencing any eye strain or discomfort? (Ss answering affirmatively were urged to close and rest their eyes during the break.) The reason I asked you is that we ran one large group of students on the Hex, and occasionally a person would report mild eye strain. That's why we now have a rest break. This is a relatively new apparatus and we don't know too much about it yet. About all I can tell you is that the group of studen-s we ran through guessed in a range between 30 and 42 inches with an average of about 36 inches.

T_{FA} and NT_{FA} subjects received the following instructions:

> Are you experiencing any eye strain or discomfort? (Ss answering affirmatively were urged to close and rest their eyes during the break.) The reason I asked you is that we ran one large group of female students on the Hex, and

occasionally a person would report mild eye strain. That's why we now have a rest break. This is a relatively new apparatus and we don't know too much about it yet. About all I can tell you is that the group of female students we ran through guessed in a range between 30 and 42 inches with an average of about 36 inches.

T_{MA} and NT_{MA} subjects received the following instructions:

Are you experiencing any eye strain or discomfort? (Ss answering affirmatively were urged to close and rest their eyes during the break.) The reason I asked you is that we ran one large group of male students on the Hex, and occasionally a person would report mild eye strain. That's why we now have a rest break. This is a relatively new apparatus and we don't know too much about it yet. About all I can tell you is that the group of male students we ran through guessed in a range between 30 and 42 inches with an average of about 36 inches.

After each S was given the appropriate instructions, the E excused herself to go prepare the apparatus for the second set of trials. After two minutes, E returned and escorted the S back into the Hex lab.

Upon conclusion of the final 30 trials, the S was brought back into the dark adaptation room. The lights in the room were turned on and a few moments were allowed for S's eyes to adjust to the lighted room. The S was then administered a short questionnaire concerning her remembered estimates of the average distance between the lights on Phase I and Phase II, and the average time between light pairs on both Phase I and Phase II. Finally, she made estimates of her confidence on both phases of the experiments. This questionnaire appears in Appendix E.

Ss were told that a summary of the results would be sent to them upon completion of the study. This was accomplished by sending a copy of the study abstract with an accompanying letter from the experimenter to each participant.

CHAPTER IV

RESULTS

Hex Apparatus

The data collected on the Hex apparatus were in the form of 30 Phase I judgments and 30 Phase II judgments for each of the 60 Ss. The individual means of Phase I and Phase II were calculated for each S (see Table I). Each S's difference score (Phase II mean on Hex minus Phase I mean on Hex) was also calculated (see Table II). These differences reflect the absolute amount of shift toward the arbitrary Hex norms introduced between Phase I and Phase II. These difference scores may be either positive or negative indicating whether the S moved on the average toward or away from the mean of the arbitrary norms.

Difference scores were subjected to a 2 X 3 completely randomized factorial analysis of variance. Tukey's post hoc test was employed for individual comparisons. Table III contains the cell means involved in these comparisons.

A split-plot factorial analysis of variance was used to analyze the data in terms of Phase I means and Phase II means for each of the individual Ss (see Table II). This analysis takes into account the degree of shift from Phase I to Phase II in relation to the initial mean baseline developed by each S in Phase I. Tukey's post hoc test was em-

TABLE II

HEX DIFFERENCE SCORES FOR EACH S*

Male Norm	Female Norms	Control Norms
Traditional		
3.27	8.73	- .07
- .40	2.20	.53
1.93	.73	1.60
2.20	6.87	4.20
3.73	6.54	.67
5.67	2.27	12.94
9.53	- .67	12.93
13.33	17.93	.80
4.60	8.07	3.06
5.67	6.54	6.53
Nontraditional		
.40	1.00	.53
1.87	3.33	7.20
.47	1.87	.80
3.13	- .90	6.13
1.00	.93	1.40
8.67	2.87	2.00
3.07	.67	2.93
7.20	6.13	3.73
8.87	1.40	1.60
4.87	.40	.60

*Difference scores for each S (mean of Phase II judgments on the Hex minus mean of Phase I judgements on the Hex) according to classification (traditional or nontraditional) and condition (male norms, female norms, or control norms).

TABLE III

CELL MEANS FOR CRF-K ON HEX
DIFFERENCE SCORES*

		1	2	3
A		5.03	2.81	--
B		4.45	3.85	3.45
A<	1	4.95	5.92	4.21
	2	3.96	1.77	2.69

*Cell means for completely randomized factorial ANOVA using Hex difference scores. Factor A: traditional (1) or nontraditional (2). Factor B: male norms (1); female norms (2); control norms (3).

employed for individual comparisons. Table IV contains the cell means involved in these comparisons.

Analysis of variance summary tables for both the completely randomized factorial ANOVA and the split-plot factorial ANOVA are contained in Tables V and VI.

Hex Hypotheses

Hypothesis 1 states that traditionals will comply more than non-traditionals on the Hex apparatus. The data were subjected to a completely randomized factorial ANOVA. These results are shown in Table V. The ANOVA shows a significant difference ($p < .05$) between traditionals and non-traditionals in the predicted direction, with traditionals complying to the arbitrary norms to a greater degree than non-traditionals, $F = 4.95$ (1,60). An individual comparison made between traditionals and non-traditionals on Phase I ($q = 1.392$) shows these groups not to be significantly different before introduction of arbitrary norms; whereas comparison between traditionals and non-traditionals on Phase II ($q = 3.05^*$) showed a significant difference with traditionals showing greater compliance. Further individual comparisons on data analyzed in the split-plot factorial ANOVA show that traditional increased significantly on compliance from Phase I to Phase II ($q = 3.658^*$), while non-traditionals did not show a significant increase in compliance from Phase I to Phase II ($q = 2.034$). Thus, hypothesis 1 was supported.

Hypothsis 2 predicts that traditionals will comply more than non-traditionals to the male norm conditions. Employing Tukey's test on difference scores, traditionals did not significantly comply more than

TABLE IV

CELL MEANS FOR SPLIT-PLOT FACTORIAL USING HEX SCORES*

		1	2	3
	A =	15.74	12.70	
	C =	14.88	13.25	14.52
	B =	12.26	16.18	
	C =			
A	1	14.60	15.05	17.55
	2	15.16	11.44	11.49
	B =			
A	1	13.22	18.26	
	2	11.30	14.10	
	B =			
	1	12.70	17.07	
C	2	11.33	15.17	
	3	12.74	16.30	
	A = 1			
	B			
	1	12.21	17.00	
C	2	12.10	18.01	
	3	15.35	19.76	
	A = 2			
	B			
	1	13.19	17.14	
C	2	10.56	12.33	
	3	10.14	12.83	

*Cell means for split-plot factorial ANOVA using Hex Phase I means and Phase II means. Factor A: traditional (1) or nontraditional (2). Factor B: Phase I (1) or Phase II (2). Factor C: male (1); female (2); or control (3).

TABLE V

CRF-K ANOVA SUMMARY TABLE FOR HEX SCORES*

Source	Error Term	Degrees of Freedom	Sum of Squares	Mean Square	F
Mean	S(AB)	1	920.73	920.72	61.44
A	S(AB)	1	74.15	74.15	4.95†
B	S(AB)	2	10.19	5.09	.33
AB	S(AB)	2	28.55	14.28	.95
S(AB)	S(AB)	54	809.28	14.99	--

*Analysis of variance summary table for 2x3 completely randomized factorial design using Hex difference scores. Factor A = classification (traditional or nontraditional); Factor B = condition (male, female, or control).

†$p < .05$.

TABLE VI

SPLIT-PLOT FACTORIAL ANOVA SUMMARY TABLE FOR HEX SCORES*

Source	Error Term	Degrees of Freedom	Sum of Squares	Mean Square	F
Mean	S(AC)	1	24254.17	24154.17	227.32
A	S(AC)	1	277.10	277.10	2.60
C	S(AC)	2	58.90	29.45	.28
B	SB(AC)	1	461.97	461.97	61.61**
AC	S(AC)	2	224.55	112.28	1.05
AB	SB(AC)	1	37.60	37.60	5.01†
CB	SB(AC)	2	3.46	1.73	.23
S(AC)		54	5761.54	106.70	
ACB	SB(AC)	2	14.70	7.33	.98
SB(AC)		54	404.94	7.50	

*Analysis of variance summary table for split-plot factorial design using Phase I mean scores on the Hex and Phase II mean scores on the Hex. Factor A = classification (traditional or nontraditional); Factor B = Phase I and Phase II scores; Factor C = condition (male norms, female norms, or control norms).

†$p < .05$.

**$p < .01$.

non-traditionals on male norms (q = .82). Hypothesis 2 was not supported.

Hypothesis 3 states that traditionals will comply more than non-traditionals on the female norm conditions. Using Tukey's test on difference scores, traditionals did comply significantly more than non-traditionals (q = 3.40*) on the female norms. Hypothesis 3 was supported.

Hypothesis 4 stated that traditionals and non-traditionals would comply to the same extent on the control norm conditions. Results of Tukey's test on difference scores indicate no significant difference between traditionals and non-traditionals (q = 1.25) on control norm conditions. Thus, Hypothesis 4 was supported.

Hypothesis 5 predicts that compliance will be greater on the male norms than on the female or control norms. Although a trend was evidenced in difference scores, with the male norm condition mean = 4.45, the female norm condition mean = 3.45, none of the comparison reached significance using Tukey's test. For the comparison between male norm mean and female norms means q = .49. The comparison between female norm means and control norm mean yielded a q = .49. The comparison between female norm means and control norm yielded a q = .33. For the comparison between male norm mean and female q = .82. Hypothesis 5 was not supported.

Confidence Estimates

Of the data collected on the post-experimental questionnaire (Appendix D), only the scores reflecting Ss' remembered confidence on Phase I and Phase II on Hex judgments were subjected to experimental

analysis. These scores were obtained following the S's return to the dark-adaptation room following Phase II on the Hex. The lights were turned on in the room, and the S was given a few moments for her eyes to adjust to normal lighting.

The S was then administered a questionnaire (Appendix D) which contained in part, two equidistant lines, one below the other, measuring 11 cm each. The far left end of each line represented very unsure (0) about Hex judgments and the far right end of each line represented very confident about Hex judgments (11). The S was instructed to indicate the amount of confidence she remembered feeling on Phase I of the Hex by placing a slash mark at some point on the top line. She was asked to repeat this procedure on the lower line indicating her remembered confidence on Phase II.

On both the upper and lower lines the distance in cm from the far left end of the line to the slash mark was used to represent the S's remembered confidence on Phase I and Phase II respectively (see Table VII).

Each S's difference score (Phase II confidence estimates minus Phase I confidence estimates) was also calculated (Table VII). These difference scores reflect the absolute amount of shift in confidence from Phase I to Phase II of Hex judgments as remembered after completion of both phases of the Hex judgments.

Difference scores were subjected to a 2 X 3 completely randomized factorial ANOVA. No a priori hypotheses were made concerning the dependent variable, confidence scores. Tukey's post hoc test was employed for individual comparisons among cell means. Table VIII contains the means used in these comparisons.

TABLE VII

CONFIDENCE SCORES FOR EACH S BY CLASSIFICATION AND CONDITION*

	Male Norms			Female Norms			Control Norms		
	Phase I	Phase II	Diff.	Phase I	Phase II	Diff.	Phase I	Phase II	Diff.
Traditional	2.7	2.7	0.0	.5	2.5	2.0	.9	1.4	.5
	1.3	2.2	.9	.3	1.3	1.0	2.7	4.3	1.6
	1.3	2.9	1.6	1.8	2.9	1.1	3.7	3.7	0.0
	2.7	4.4	1.7	1.8	5.3	3.5	3.1	3.1	0.0
	1.6	.4	-1.2	2.8	4.3	1.5	3.8	3.8	0.0
	2.0	3.2	1.2	4.2	6.7	2.5	1.9	4.5	2.6
	2.0	2.9	.9	1.9	3.1	1.2	2.4	3.9	1.5
	1.7	3.7	2.0	.7	4.3	3.6	4.4	4.4	0.0
	2.1	3.7	1.6	4.6	5.4	.8	5.1	5.1	0.0
	3.0	3.8	.8	2.0	2.9	.9	1.0	2.0	1.0
Nontraditional	0.0	0.0	0.0	4.8	3.1	-1.7	4.4	4.4	0.0
	3.4	3.9	.5	2.2	3.7	1.5	1.1	2.7	1.6
	.3	.3	0.0	3.4	3.9	.5	2.6	3.3	- .9
	.9	2.2	1.3	1.6	2.0	.4	1.0	.7	- .3
	4.7	3.7	-1.0	4.7	4.5	- .2	4.1	4.1	0.0
	3.9	3.0	- .9	5.3	.3	-4.8	2.2	3.0	.8
	0.0	2.8	2.8	4.5	5.1	.6	0.0	4.8	4.8
	2.1	2.7	.6	.7	1.3	.6	1.0	1.4	.4
	1.6	3.4	1.8	2.0	1.1	- .9	2.0	1.4	- .6
	2.3	2.9	1.6	2.0	3.7	1.7	2.0	2.8	.8

*Scores in Cm of remembered confidence estimates on Phase I of Hex, confidence scores on Phase II of Hex, and remembered confidence differences scores (confidence Phase II minus confidence Phase I) for each S according to classification (traditional or nontraditional) and condition (male norm, female norm, or control norm) $N_T = 60$.

TABLE VIII

CELL MEANS FOR CRF-K ON CONFIDENCE DIFFERENCE SCORES*

		1	2	3
A		1.16	.42	
B		.81	.79	.77
A<	B = 1	.95	1.81	.72
	2	.67	-.23	.82

*Cell means for completely randomized factorial ANOVA using confidence difference scores. Factor A: traditional (1) or nontraditional (2). Factor B: male norms (1); female norms (2); control norms (3).

A split-plot factorial analysis of variance was used to analyze the data in terms of Phase I confidence scores and Phase II confidence scores for each of the Ss (see Table VII). This analysis takes into account the degree of shift in confidence from Phase I to Phase II in relation to the baseline remembered confidence in Phase I Hex judgments. Tukey's post hoc test was employed for individual comparisons. Table IX contains the cell means involved in these comparisons.

Analysis of variance summary table for both the completely randomized factorial ANOVA and the split-plot ANOVA are contained in Tables X and XI.

Confidence Hypotheses

Although no hypotheses were formulated concerning confidence estimates prior to data collection, several significant F tests warranted post hoc analyses of the data. Table X contains ANOVA summaries for the completely randomized factorial ANOVA on confidence difference scores; Table XI contains ANOVA summaries for the split-plot factorial ANOVA on Phase I and Phase II confidence scores.

Traditionals increased significantly more than non-traditionals on confidence from Phase I to Phase II ($F = 4.78^{*}$) as assessed by post-experimental estimates regarding Phase I and Phase II Hex performance. Both traditionals and non-traditionals showed an overall increase in confidence; however, only traditionals evidenced a highly significant ($q = 6.45^{**}$) increase. Observed q for non-traditionals only approached significance ($q = 2.33$). Although there was no significant difference between traditionals and non-traditionals and non-traditionals on Phase I confidence estimates ($q = 1.12$), there was a significant difference

TABLE IX

CELL MEANS FOR SPLIT-PLOT FACTORIAL USING CONFIDENCE SCORES*

	1	2	3
A	2.91	2.57	
C	2.39	2.99	2.86
B	2.35	3.14	
C =			
A_1	2.52	2.97	3.26
A_2	2.26	3.01	2.45
B =			
A_1	2.33	3.49	
A_2	2.36	2.78	
B			
1	1.98	2.79	
C2	2.59	3.38	
3	2.47	3.23	
A = 1			
B =			
1	2.04	2.99	
C2	2.06	3.87	
3	2.90	3.62	
A = 2			
B =			
1	1.92	2.59	
C2	3.12	2.90	
3	2.04	2.86	

*Cell means for split-plot factorial ANOVA using Phase I confidence scores and Phase II confidence scores. Factor A: traditional (1) or nontraditional (2). Factor B: Phase I (1) or Phase II (2). Factor C: male (1); female (2); control (3).

TABLE X

CRF-K ANOVA SUMMARY TABLE FOR CONFIDENCE SCORES*

Source	Error Term	Degrees of Freedom	Sum of Squares	Mean Square	F
Mean	S(AB)	1	37.45	37.45	21.78
A	S(AB)	1	8.21	8.21	4.78†
B	S(AB)	2	.16	.80	.01
AB	S(AB)	2	13.04	6.52	3.80†
S(AB)	S(AB)	54	92.85	1.72	

*Analysis of variance summary table for 2x3 completely randomized factorial design using remembered confidence difference scores. Factor A = classification (traditional or nontraditional); Factor B = condition (male, female, or control).

†$p < .05$.

TABLE XI

SPLIT-PLOT FACTORIAL ANOVA SUMMARY TABLE FOR CONFIDENCE SCORES*

Source	Error Term	Degrees of Freedom	Sum of Squares	Mean Squares	F
Mean	S(AC)	1	901.10	901.10	299.03
A	S(AC)	1	3.53	3.53	1.17
C	S(AC)	2	7.97	3.99	1.32
B	SB(AC)	1	18.72	18.72	21.78†
AC	S(AC)	2	3.72	1.86	.62
AB	SB(AC)	1	4.11	4.11	4.78
CB	SB(AC)	2	.80	.40	.01
S(AC)		54	162.89	3.02	
ACB	SB(AC)	2	6.52	3.26	3.79**
SB(AC)		54	46.43	.86	

*Analysis of variance summary table for split-plot factorial design using remembered confidence score on Phase I and Phase II of Hex judgments. Factor A = classification (traditional or nontraditional); Factor B = Phase I and Phase II scores; Factor C = condition (male, female, or control).

†$p < .01$.

**$p < .05$.

between traditionals and non-traditionals on Phase II estimates (q = 2.97*). A significant difference was also noted (F = 4.78) between traditionals and non-traditionals on confidence difference scores.

A significant two-way interaction (F = 4.78) on factors A and B on the completely randomized factorial ANOVA was found. The only significant pairwise comparison (q = 4.916**) was between traditionals and non-traditionals on the female norm conditions. Traditionals showed a significantly greater degree of gained confidence on the female norms than did the non-traditionals. Traditionals showed their greatest gain in confidence on the female norms, whereas the non-traditionals actually lost confidence from Phase I to Phase II on the female norms. Table VIII contains the means used in these comparisons.

A significant (F = 3.79*) three-way interaction of factors A, B, and C on the split-plot factorial ANOVA did not yield any significant pairwise comparisons among means (largest q = 2.73).

CHAPTER V

DISCUSSION

Hex Apparatus

The presentation of arbitrary Hex norms to Ss who have previously established a baseline range and mean of judgments on Hex trials does cause a shift in judgments, i.e. compliance, toward these arbitrary norms when the Ss are again given a series of trials on the Hex. This finding is not a unique phenomenon and has been documented for numerous norm formation judgment situations (Sherif and Sherif, 1969). Pace's (1972) results gave confirmation to this general phenomenon utilizing the Hex apparatus.

Hypothesis 1 of the present study was concerned with the differential effect on compliance of the Ss' sex role preferences, i.e. traditional or non-traditional. As was predicted, traditionals evidenced more compliance than non-traditionals. This sex-role difference in compliance has been noted previously (Crutchfield, 1975; Goldberg, 1975) utilizing judgment situations in the tradition of Crutchfield (1955) and Asch (1955). However, to this writer's knowledge, no such studies have confirmed or refuted these findings employing the Sherifian (Sherif and Sherif, 1969) paradigm of arbitrary norm formation judgment situations.

In addition to the manipulation of the sex-role variable, Ss within each of the classifications were presented with the arbitrary Hex norms

identified as having been formed variously by male college students, female college students, or college students in general. Hypothesis 2 predicted that traditionals would comply more than non-traditionals to the male norm conditions. Hypothesis 2 was not supported. What might partially account for this is the nature of the Hex task. According to Sistrunk and McDavid (1971):

> Indeed, the evidence indicates that conformity is a complex but lawful behavioral product of a number of interrelated determinants, among which are both characteristics of the person and the task he is performing (p. 206).

Goldberg (1975) found that traditionals complied more than non-traditionals on all-male majority when the items were male-related (i.e. stereotypically seen as items on which males perform with more expertise), and when the task was female-related (stereotypically seen as items on which females perform with more expertise). No empirical data exist which might indicate the gender-relatedness of the Hex apparatus.

Hypothesis 3 predicted that traditionals would comply more than non-traditionals on the female norm conditions. This hypothesis was supported. It is worthy of not that the greatest difference between traditionals and non-traditionals was evidenced on the female norms. Traditionals showed the greatest degree of convergence toward the arbitrary norms on the female norm conditions; whereas, non-traditionals showed the least amount of convergence on the female norms. It seems plausible that traditionals perceive themselves similar to "female college students," identifying with them and therefore converging more toward female norms than toward either the male or neutral norm conditions. On the other hand, the non-traditionals comply on the average

much less to the female norms than to either the male or neutral norms. Again, it seems plausible that they perceive themselves as not being similar to "female college students," and thus they comply very little to female norms, i.e. to the group (female college students) with whom they perceive they have little in common. This "identification" interpretation seems the most plausible inference since task variables do not seem to account for the differential shift noted between traditionals and non-traditionals. Goldberg (1975) found no difference in compliance between traditionals and non-traditionals to an all-female majority on either male, female, or neutral task items. These comparisons must be made with caution, however, because Goldberg's design, including the dependent variable were different, though similar to the ones used in the present study.

Hypothesis 4 predicted the traditionals would comply to the same extent on the control norm condition. Hypothesis 4 was supported. This is consistent with Goldberg's (1975) findings for a mixed (male and female) majority.

Hypothesis 5 predicted that compliance would be greater on the male norms than on the female or control norms. Although a trend was evidenced using difference scores, with male norm mean greatest and control norm mean smallest, none of these comparisons reached significance. Goldberg (1975) found that when the task was male-related, compliance was greatest to male norms. This pattern was less noticable when the task was either female or neutral. Thus, the same trend on data analyzed in the present study was evident, but lack of empirical data on gender-relatedness of the Hex militates against a clear-cut interpretation of this finding.

Confidence Estimates

Traditionals increased significantly more than non-tradtionals on confidence from Phase I to Phase II as assessed by post-experimental estimates regarding Phase I and Phase II Hex performance. Both traditional and non-traditional respondents showed an overall increase in confidence; however, only traditionals evidenced a highly significant increase. Although there was no significant difference between traditionals and non-traditionals on Phase I confidence estimates, there was a significant difference between traditionals and non-traditionals on Phase II estimates. A significant difference was also noted between traditionals and non-traditionals on confidence using difference scores.

A significant two-way interaction on factors A (classification) and B (condition) on the completely randomized factorial ANOVA was found. The only significant pairwise comparison was between traditionals and non-traditionals on female norm conditions. Traditionals showed a significantly greater degree of gained confidence on the female norms, whereas the non-traditionals actually lost confidence from Phase I to Phase II on the female norms.

A significant three-way interaction of factors A, B, and C on the split-plot factorial ANOVA did not yield any significant pairwise comparison.

Hex Performance and Confidence Estimates

In considering Hex performance and confidence estimates together, a clear trend toward increased confidence was seen when Ss showed compliance toward the arbitrary norms. When compliance increased, a

corresponding increase in confidence was noted. This trend was particularly evident on the female norm conditions. Traditional subjects complied to the greatest degree on female norms, and they exhibited their greatest degree of gained confidence on female norm conditions. On the other hand, non-traditionals displayed the least amount of compliance on the female norms, and they exhibited an actual loss of confidence on female norm conditions. Further accentuating this finding is the fact that only the non-traditional confronted with female norm actually lost confidence from Phase I to Phase II.

Summary

The introduction of arbitrary norms, after initial experience with the Hex, does cause a shift toward these norms when the S is again confronted with the Hex judgment situation. In the present study, traditionals showed a significantly greater degree of compliance than did non-traditionals. This is consistent with previous research. A non-significant trend toward greater compliance toward male norms was noted, with the least amount of compliance exhibited toward control norms. Previous research has shown a significantly greater degree of compliance to information attributed to male sources, particularly for traditional females; however, this trend is most evident when subjects perceive the task to be with in the domain of male expertise. No empirical data exist concerning the gender-relatedness of the Hex apparatus.

It was also noted that traditionals complied to the greatest degree to information attributed to female college students, while

non-traditionals complied least to these female norms. An interpretation of differential identification with "female college students" was tentatively proposed.

In general, confidence increased for all Ss from Phase I to Phase II, as estimated by Ss after exposure to both phase of Hex judgments. The increase in confidence was greater for traditionals than for non-traditionals. The most noteworthy finding on confidence estimates was that traditionals gained their most appreciable amount of confidence on female norms, while non-traditionals actually lost confidence on female norms. This seems to indicate that experience with the Hex; structuring of the situation through introduction of arbitrary norms; and the fact of compliance; work together to produce a general increase in confidence. When Ss complied most (traditionals on female norms) they showed the greatest increase in confidence. When Ss complied least (non-traditionals on female norms) they felt an actual loss in confidence.

Implications for Further Research

The Hex apparatus, as utilized in the present study, does appear to be a viable research instrument for detecting shifts in judgment to arbitrary information. The instrument is both sensitive enough to show shifts in judgment in general, and to show differential shifts for traditional and non-traditional women. Non-significant trends in differential shifts were noted as well across the three conditions: male norms, female norms, and control norms. This last finding might be accounted for partially by the moderate degree of arbitrariness of the Hex (Pace, 1972) as well as by the unspecified gender-relatedness of the apparatus

(Goldberg, 1975). Pace (1972) conducted a study comparing the degree of arbitrariness of several norm formation judgments situations, including the Hex. The investigator of the present study suggests that further research be initiated concerning comparative degrees of arbitrariness and its effect upon compliance utilizing a research paradigm similar to the one used in this study.

Another salient question concerning the Hex apparatus is the question of gender-relatedness of the task. Empirical data need to be collected and analyzed on the gender-relatedness of norm formation judgment situations being used presently in the study compliance and conformity. Studies should be initiated to assess the comparability of findings on the Hex with findings utilizing such stereotypically masculine tasks as the "shotgun" (MacNeil and Pace, 1973) and "pinball" (Pace and MacNeil, 1973) judgment situations, and with a stereotypically feminine judgment task such as the "jukebox" (Pace, 1972). Though no consistent relationship exists between the results of this study and the results of Goldberg's (1975) study manipulating gender of task items, these results can only be compared cautiously due to differences in instrumentation and dependent variable.

Concerning the classification of Ss as traditional or non-traditional, further research in several areas might be suggested. First, studies should be conducted assessing the relation between AWS scores and other measures of female sex roles. The literature review in this paper might be a source of instruments to be used in such comparisons. As Carlson (1973) suggested, the bi-polar construct view of traditionally versus non-traditionality might not be the most appropriate

model, and different measures of sex-role adherence may be tapping various attitudes which are not in fact correlated with information obtained on the AWS. This factor might account partially for conflicting results concerning the nature of compliance (Goldberg, 1975) and its relationship to sex-role preference. Secondly, an attempt should be made to formulate and standardize unobtrusive measurement instruments for the assessment of sex-role preference. One study attempted to formulate such instruments in the guise of "crisis situations" (Holcomb, 1974); however, this work was only a preliminary attempt to assess correlation of these instruments with instruments used previously in sex-role assessment. The development of unobtrusive measures would allow study of the effects on behavior of sex-role preference without alerting the subjects to the fact that their sex-role preference was a classification variable within the research situation. Webb, Campbell, Sechrest, and Schwartz (1968) provide a lucid guide to the formulation of unobtrusive measures in the social sciences.

Finally, a design feature with ethical implications needs further consideration. Allowing Ss to know that their performance on the AWS is related to the task they are to perform on the Hex certainly produced research artifacts of some unspecifiable nature (Orne, 1962). In fact, in the present study three Ss guessed accurately the nature of the study when asked on the post-experimental questionnaire "What do you think this study was about?" A substantial number of other Ss thought there was a connection between the two events without knowing the nature of this relationship. Not allowing the Ss to know that their performance on the AWS was the basis for their selection would

introduce another feature of deception into the research design. The author does not purport to have the definitive answer on this, or other questions of deception and ethics, but readers are urged to consider the fine balance between harm to the S and the need for research not contaminated (to some unspecifiable degree) by Ss' "research hypotheses" concerning the experiment. Perhaps the most logical solution is more studies designed to observe these same variables in natural settings without direct intervention by the E.

Concerning the arbitrary norm conditions--male, female, or control--two major research concerns are evident. The non-significance of the trend of greatest compliance to male norms, with least compliance to control norms, might be a partial function of the moderately arbitrary nature of the Hex (Pace, 1972). Research might be initiated to see if this trend is present and/or accentuated using more highly arbitrary judgment situations. The second finding of note in the present concerning norm conditions was the significantly greater amount of shift on the Hex for traditionals on the female norms than for non-traditionals on female norms. An interpretation of differential identification with "female college students" was tentatively proposed by this author. If this were true, systematically assigning different traits to the women attributed with the formation of norms should have some influence on performance. For example, would the opposite pattern in compliance be evidenced if instead of "female college students" the phrase "female Ph.D.'s" were used?

Concerning the relationship between Hex compliance and confidence, it was noted that confidence increased from Phase I to Phase II. More

specifically, confidence increased in relation to the amount of compliance exhibited. Confidence increased as the amount of compliance increased. Clear-cut interpretations are difficult here because, in addition to compliance, two other factors increased from Phase I to Phase II--increased experience with Hex and increased structure due to the introduction of information through presentation of the arbitrary norms. Studies should be designed to separate out the contributions of these, and possibly other, contributing factors.

Three more general methodological questions will be posed in this concluding paragraph. First, the introduction of arbitrary norm formation through verbal instructions might be changed so that information is obtained through S "plants" posing as Ss and giving arbitrary judgments on each trial of Phase II prior to the naive S's judgments. This approach has been used extensively in the norm formation literature, and is reviewed in Sherif and Sherif (1969). Secondly, another study similar to the present one should be conducted also using traditional and non-traditional males. Finally, the issue of operationalizing the terms compliance, conformity, and shifts in judgments needs discussion. The literature abounds with findings on "conformity" without a consistent operational criterion for the manifestation of conforming behavior. For a discussion fo operational definitions of these terms and their use with norm formation judgment situations, the reader is referred to Pollis and Montgomery (1966).

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APPENDIX A

ATTITUDE TOWARD WOMEN SCALE--

SHORT FORM AND COVER SHEET

1. Age ____ Sex _____

2. Size of city in which you attended high school
   __ less than 10,000
   __ 10,000 to 40,000
   __ 40,000 to 70,000

3. Class
   __ Freshman __ Sophomore __ Junior __ Senior __ Other
   If other, please specify _____

4. Major _____

I would like to have some selected students serve further in this in this research project. If you wish to volunteer, your instructor will give you extra credit for your participation, and at the end of the study you will receive a summary of the results as well as an individual session with the researcher upon request.

If you are selected, would you be willing to participate?

__ YES __ NO

If you indicated YES, please complete the following:

Name _____

Address _____

Phone _____

Thank you for your participation in this research.

Linda Holcomb

ATTITUDES TOWARD WOMEN

The statements listed below describe attitudes toward the role of women in society which different people have. There are no right or wrong answers, only opinions. You are asked to express your feelings about each statement by indicating whether you: (a) Agree Strongly, (b) Agree Mildly, (c) Disagree Mildly, or (d) Disagree Strongly.

(a) Agree Strongly = AS
(b) Agree Mildly = AM
(c) Disagree Mildly = DM
(d) Disagree Strongly = DS

1. Swearing and obscenity are more repulsive in the speech of a woman than a man.

   AS AM DM DS

2. Women should take increasing responsibility for leadership in solving the intellectual and social problems of the day.

   AS AM DM DS

3. Both husband and wife should be allowed the grounds for divorce.

   AS AM DM DS

4. Telling dirty jokes should be mostly a masculine prerogative.

   AS AM DM DS

5. Intoxication among women is worse than intoxication among men.

   AS AM DM DS

6. Under modern economic conditions with women being active outside the home, men should share in household tasks such as washing dishes and doing the laundry.

   AS AM DM DS

7. It is insulting to women to have the "obey" clause remain in the marriage service.

   AS AM DM DS

8. There should be a strict merit system in job appointment and promotion without regard to sex.

   AS AM DM DS

9. A woman should be as free as a man to propose marriage.

   AS AM DM DS

10. Women should worry less about their rights and more about becoming good wives and mothers.

    AS AM DM DS

11. Women earning as much as their dates should bear equally the expense when they go out together.

AS AM DM DS

12. Women should assume their rightful place in business and all the professions along with men.

AS AM DM DS

13. A woman should not expect to go exactly the same places or to have quite the same freedom of action as a man.

AS AM DM DS

14. Sons in a family should be given more encouragement to go to college than daughters.

AS AM DM DS

15. It is ridiculous for a woman to run a locomotive and for a man to darn socks.

AS AM DM DS

16. In general, the father should have greater authority than the mother in the bringing up of children.

AS AM DM DS

17. Women should be encouraged not to become sexually intimate with anyone before marriage, even their fiances.

AS AM DM DS

18. The husband should not be favored by law over the wife in the disposal of family property or income.

AS AM DM DS

19. Women should be concerned with their duties of childbearing and house-tending, rather than with desires for professional and business careers.

AS AM DM DS

20. The intellectual leadership of a community should be largely in the hands of men.

AS AM DM DS

21. Economic and social freedom is worth far more to women than acceptance of the ideal of femininity which has been set up by men.

AS AM DM DS

22. On the average, women should be regarded as less capable of contribution to economic production than are men.

AS AM DM DS

23. There are many jobs in which men should be given preference over women in being hired or promoted.

AS AM DM DS

24. Women should be given equal opportunity with men for apprenticeship in the various trades.

AS AM DM DS

25. The modern woman is entitled to the same freedom from regulation and control that is given to the modern man.

AS AM DM DS

APPENDIX B

NORMATIVE INFORMATION ON THE AWS FOR OKLAHOMA STATE UNIVERSITY STUDENTS

TABLE XII

MEAN, MEDIAN AND RANGE OF AWS SCORES

Male Norms			Female Norms			Control Norms		
Mean	Median	Range	Mean	Median	Range	Mean	Median	Range
Traditional								
34.4	38	19	32.0	34	20	33.4	37	22
Nontraditional								
64.1	63	12	64.8	63.5	14	62.2	60	11

*Mean, median and range of AWS scores (n = 10) by classification (traditional or nontraditional) and condition (male norms, female norms, or control norms).

APPENDIX C

NORMATIVE INFORMATION ON THE AWS FOR SPENCE ET AL. STUDENT SAMPLE

APPENDIX D

POST-EXPERIMENTAL QUESTIONNAIRE

Please respond to these questions to the best of your knowledge. Thank you for your cooperation in this phase of the study. On the first two questions, make a hash mark on the line below the question to represent your feelings.

1. How confident did you feel about your first 30 trials?

Very confident — Very unsure

2. How confident did you feel about your second 30 trials (after the rest break)?

Very confident — Very unsure

3. Average distance between lights:
   a. First 30 trials ____
   b. Second 30 trials ____ (after rest break)

4. What do you think this research was about?

VITA 2

Linda Anne Holcomb

Candidate for the Degree of

Doctor of Philosophy

Thesis: SEX BIAS IN EXPERIMENTAL NORM FORMATION BY TRADITIONAL AND NON-TRADITIONAL WOMEN

Major Field: Psychology

Biographical:

Personal Data: Born in Muskogee, Oklahoma, December 3, 1946, the daughter of Mr. and Mrs. Raymond Holcomb.

Education: Graduated from Central High School, Muskogee, Oklahoma, in May, 1964; attended the University of Oklahoma, Norman, 1964-1967; attended Bacone College, Bacone, Oklahoma, during the summers of 1964 and 1965; received the Bachelor of Arts degree from Northeastern Oklahoma State University, Tahlequah, in May, 1969; received the Master of Science degree from Oklahoma State University in December, 1974; completed the requirements for the Doctor of Philosophy degree at Oklahoma State University in May, 1976.

Professional Experience: Graduate assistant at Oklahoma State University, 1969-1973; N.I.M.H. traineeship, 1971-1973; counselor and instructor, Bacone College, 1973-1974; clinical intern, Veterans Administration Hospital, Topeka, Kansas, August, 1974 to August, 1975; research and teaching assistant, Oklahoma State University, 1975-1976.

Professional Organizations and Honors: Elected to membership in Rho Theta Sigma Scholastic Honor Society; Phi Kappa Phi Honor Society, 1976; Outstanding Student in Psychology, Northeastern Oklahoma State University; Panhellenic Scholarship, the University of Oklahoma; Graduate Excellence award, Oklahoma State University.